SATELLITE ATMOSPHERES AND MAGNETOSPHERES A.J. Kliore. (J e t Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109, USA),

The Galileo orbiter spacecraft is carrying out a "tour" of the Jovian system, during the course of which it will provide radio occultations by all of the Galilean satellites of Jupiter. By the end of the Galileo mission in October of 1997, 10 (J 1) will have occulted the spacecraft eight times, Europa (J2) three times, Ganymede (J3) four times , and Callisto (J4) once. The occultation of Europa in December, 1996, has produced evidence of a tenuous ionosphere , with a maximum electron density near the surface of about 104 cm^{-3} and a plasma scale height of about 200-300 km. If the neutral atmosphere consists of H_2O or O_2, This implies a maximum neutral density of about 108 cm^{-3} near the surface(Kliore, et al., Science in press). The occultations of Ganymede and Callisto also indicate the presence of even more tenuous ionospheres. Occultations of 10 have shown an ionosphere remarkably like that observed with Pioneer 10 1 n 1973 .A magnetosphere was discovered at Ganymede imbedded in Jupiter's magnetosphere (Kivelson, et al ., Nature, 384,537,(1 996) The research described in this paper has been conducted at the Jet Propulsion Laboratory with support from NASA contracts and grants.

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